



Attorney Docket: 0492611-0530/MIT-10077  
**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

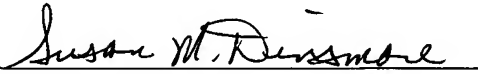
Applicant: Levenberg, *et al* Examiner: To be assigned  
Serial No.: 10/731,672 Art Unit: 1636  
Filing Date: December 9, 2003  
Title: ENGINEERING THREE-DIMENSIONAL TISSUE STRUCTURES  
USING DIFFERENTIATING EMBRYONIC STEM CELLS

Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

Sir:

**CERTIFICATE OF MAILING**

I hereby certify that this correspondence is being deposited with the United States Postal Service as first-class mail in an envelope addressed to: Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450, on October 8, 2004.

  
Susan M. Dinsmore

**PETITION TO INCLUDE COLOR DRAWING UNDER 37 C.F.R. 1.84(a)(2)**

Figures 1-3, and 6-14 of the drawings of the above-referenced application are executed in color. The color figures are micrographs of stained and labeled sections of tissue. The stains cause the tissue or components of the tissue to adopt a specific color indicating various proteins and tissue structures. Without color, one could not adequately convey to one skilled in the art the histological effects of the various techniques disclosed in the application, including the techniques of the invention and various experimental controls. Three copies of the color figures, and a set in black and white, are included. The specification of the application contains the statement required by 37 C.F.R. §1.84(a)(2)(iii).

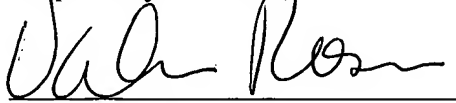
10/14/2004 LWONDIM1 00000017 10731672

01 FC:1460

130.00 DP

The petition fee under 37 C.F.R. 1.17(h) of \$130.00, is enclosed herewith. Please charge any other fees associated with this filing, or apply any credits, to our Deposit Account No. 03-1721.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Val B. Rosen', written over a horizontal line.

Valarie B. Rosen, Ph.D.

Registration Number 45,698

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53 State Street  
Boston, MA 02109  
(617) 248-5000  
Dated: October 8, 2004

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FIG. 1A

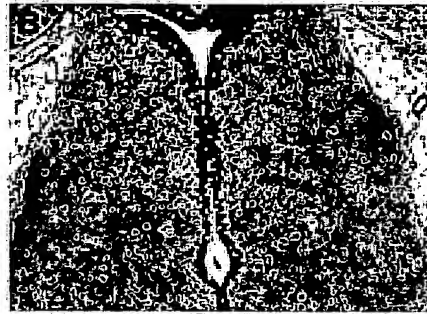


FIG. 1B

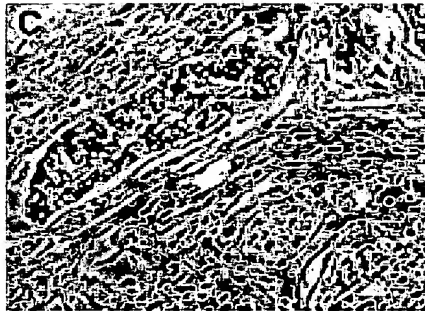


FIG. 1C



FIG. 1D

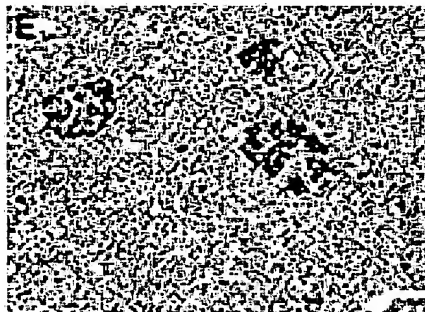


FIG. 1E

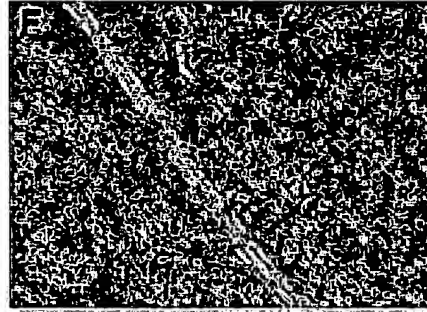


FIG. 1F

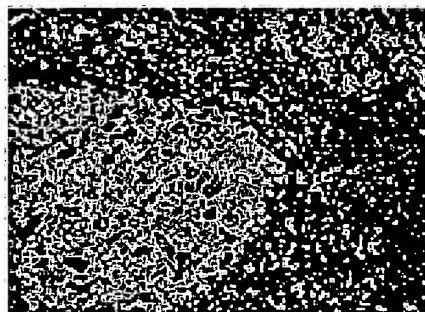


FIG. 1G



FIG. 1H

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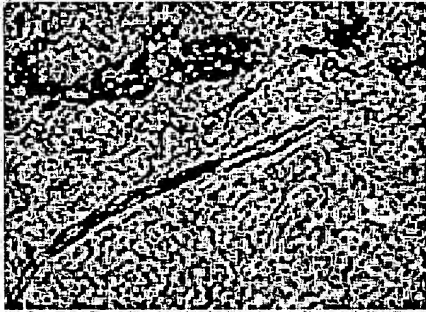


FIG. 1I



FIG. 1J

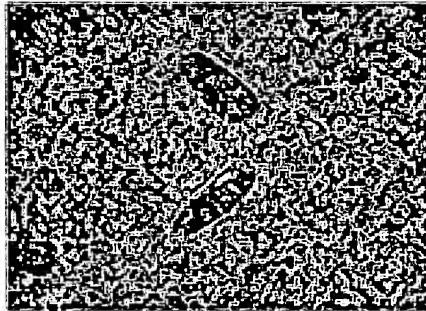


FIG. 1K

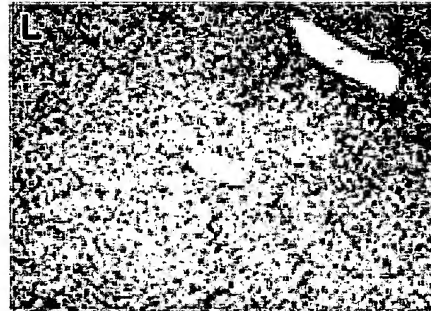


FIG. 1L

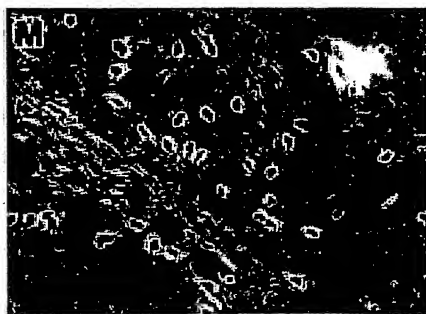


FIG. 1M

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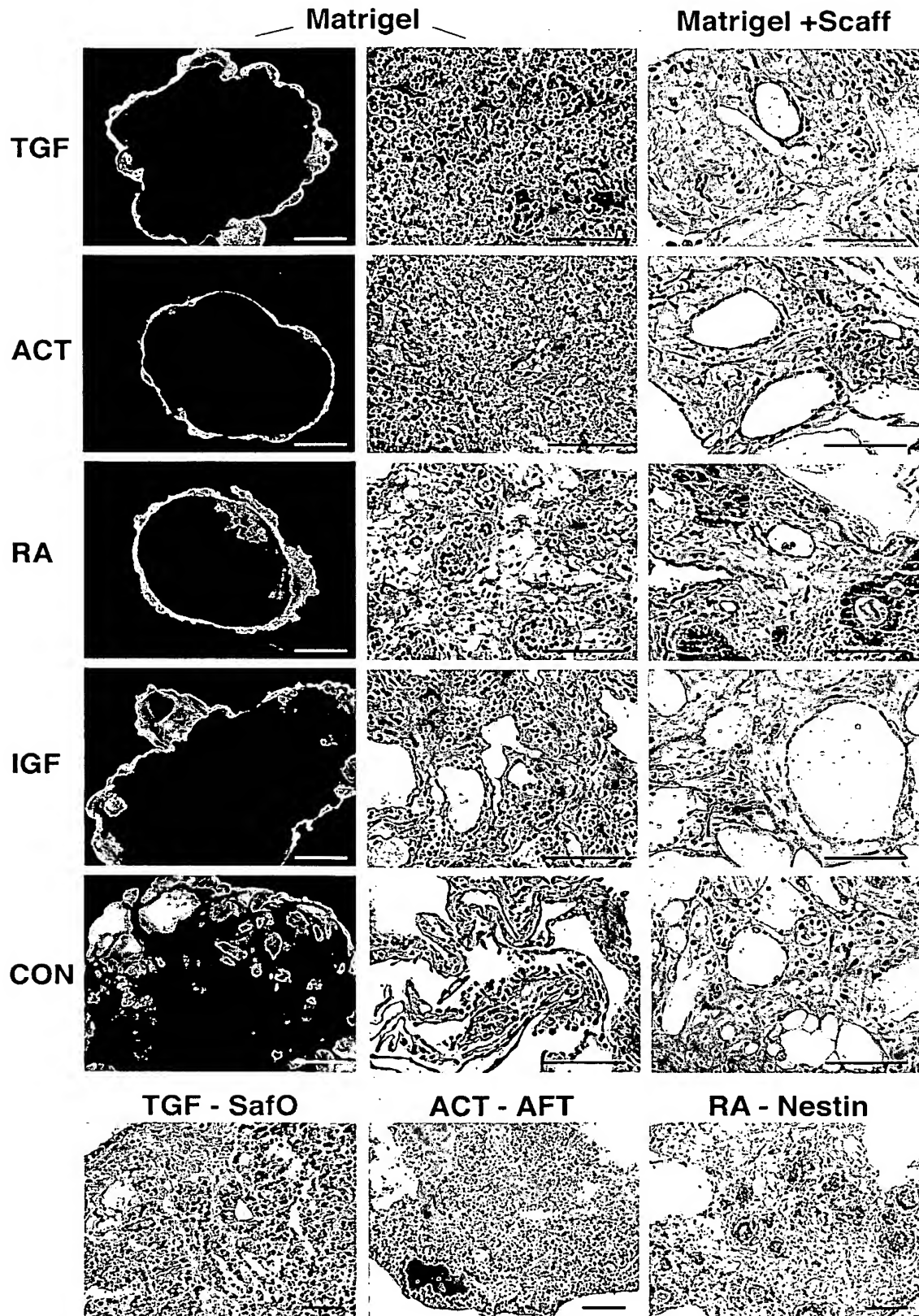


FIG. 2A

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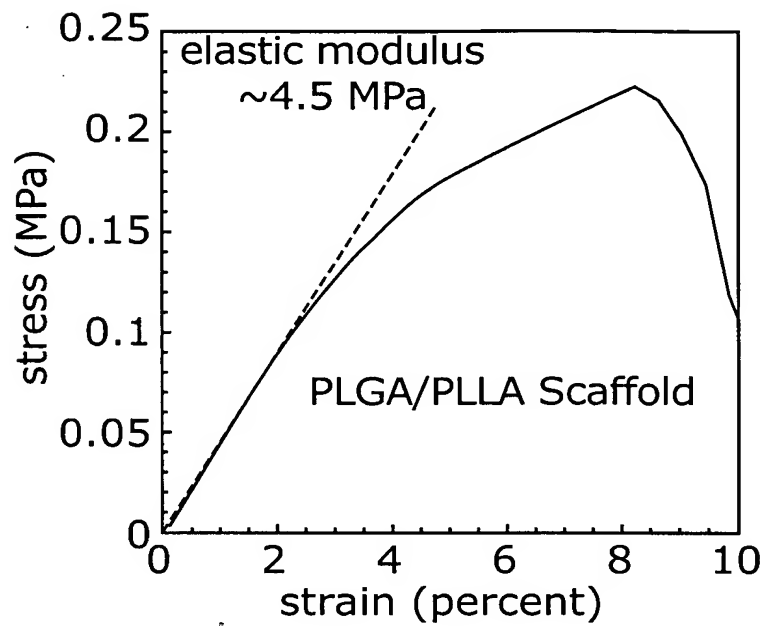


FIG. 2B

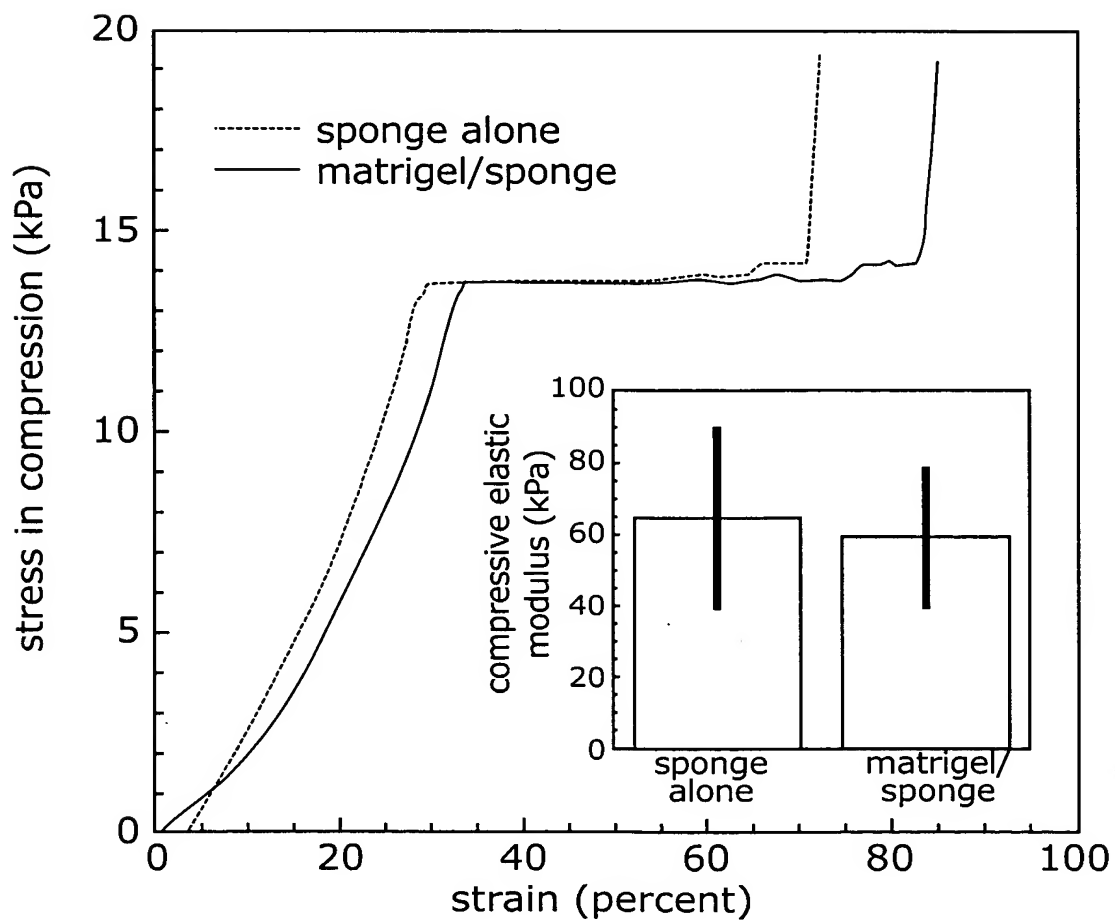


FIG. 2C

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	strain (percent)		
	Scaffold alone	Matrigel/ scaffold	Matrigel alone
Tensile modulus (MPa)	5.0±3.4	N/A	N/A
Compressive modulus (kPa)	64.7±25	59.0±19.1	N/A
Storage modulus (kPa)*			0.015†
Loss modulus (kPa)*			0.009†

† At a shear rate of 1 rad/sec.

FIG. 2D

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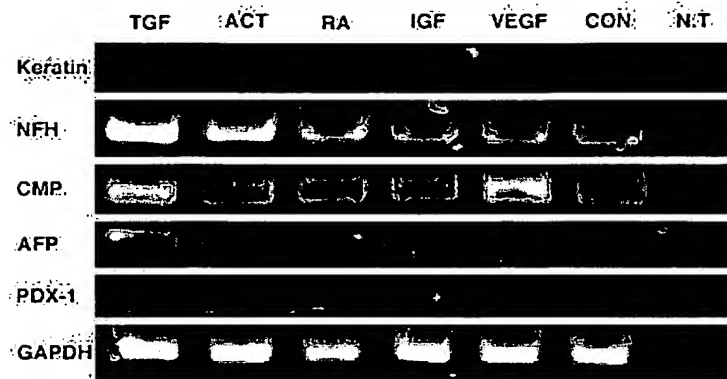


FIG. 3

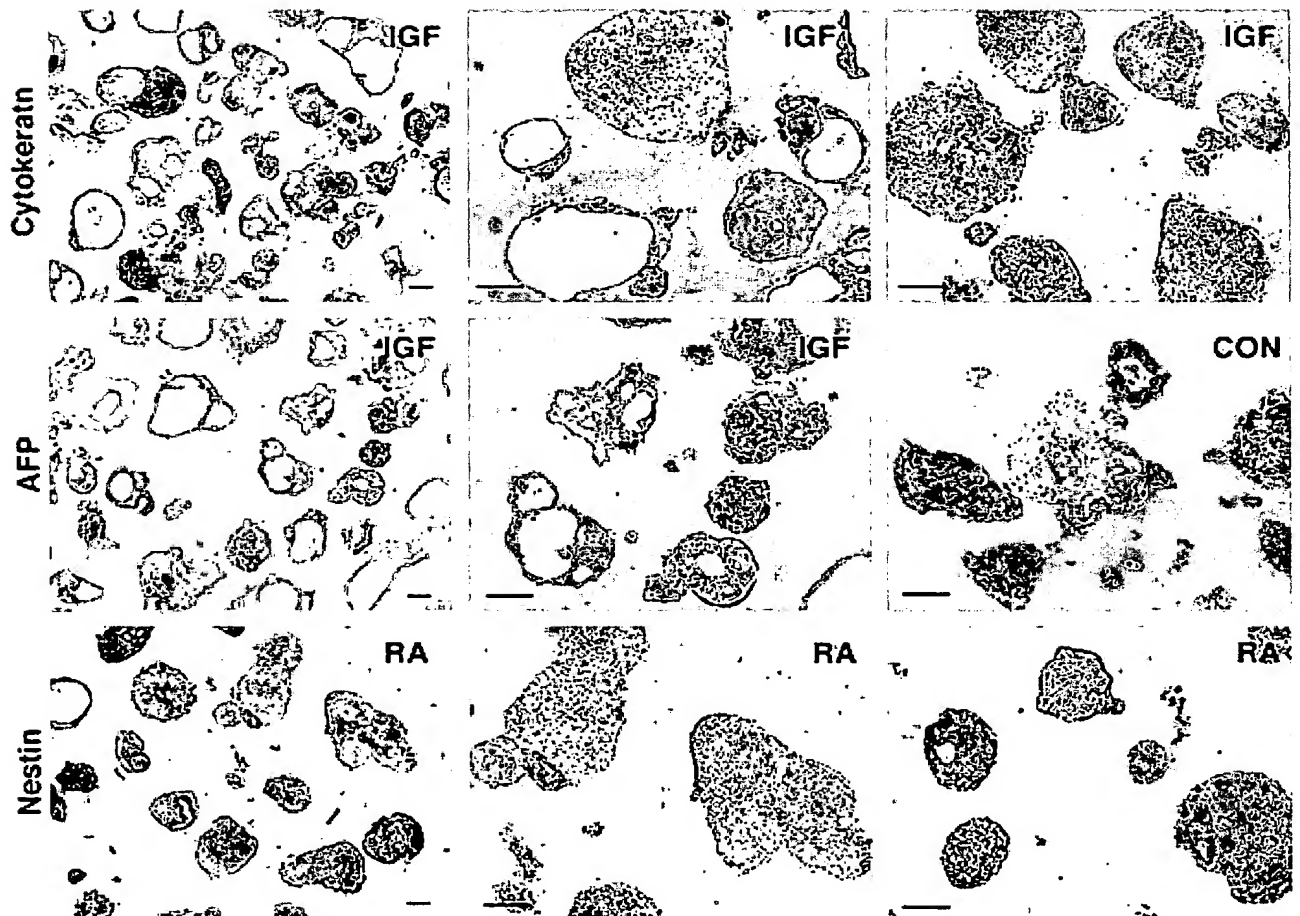


FIG. 4



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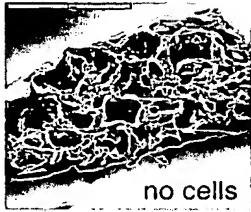


FIG. 5A



FIG. 5B

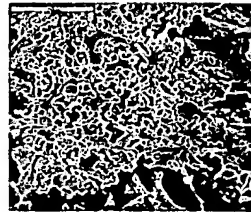


FIG. 5C

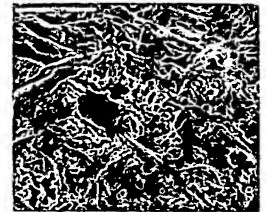


FIG. 5D

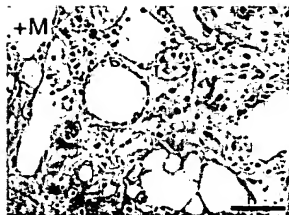


FIG. 5E



FIG. 5F

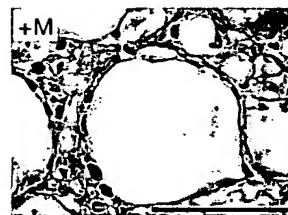


FIG. 5G



FIG. 5H



FIG. 5I

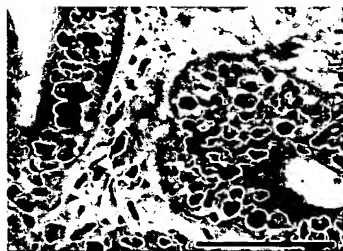


FIG. 5J

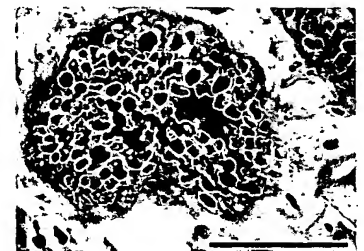


FIG. 5K

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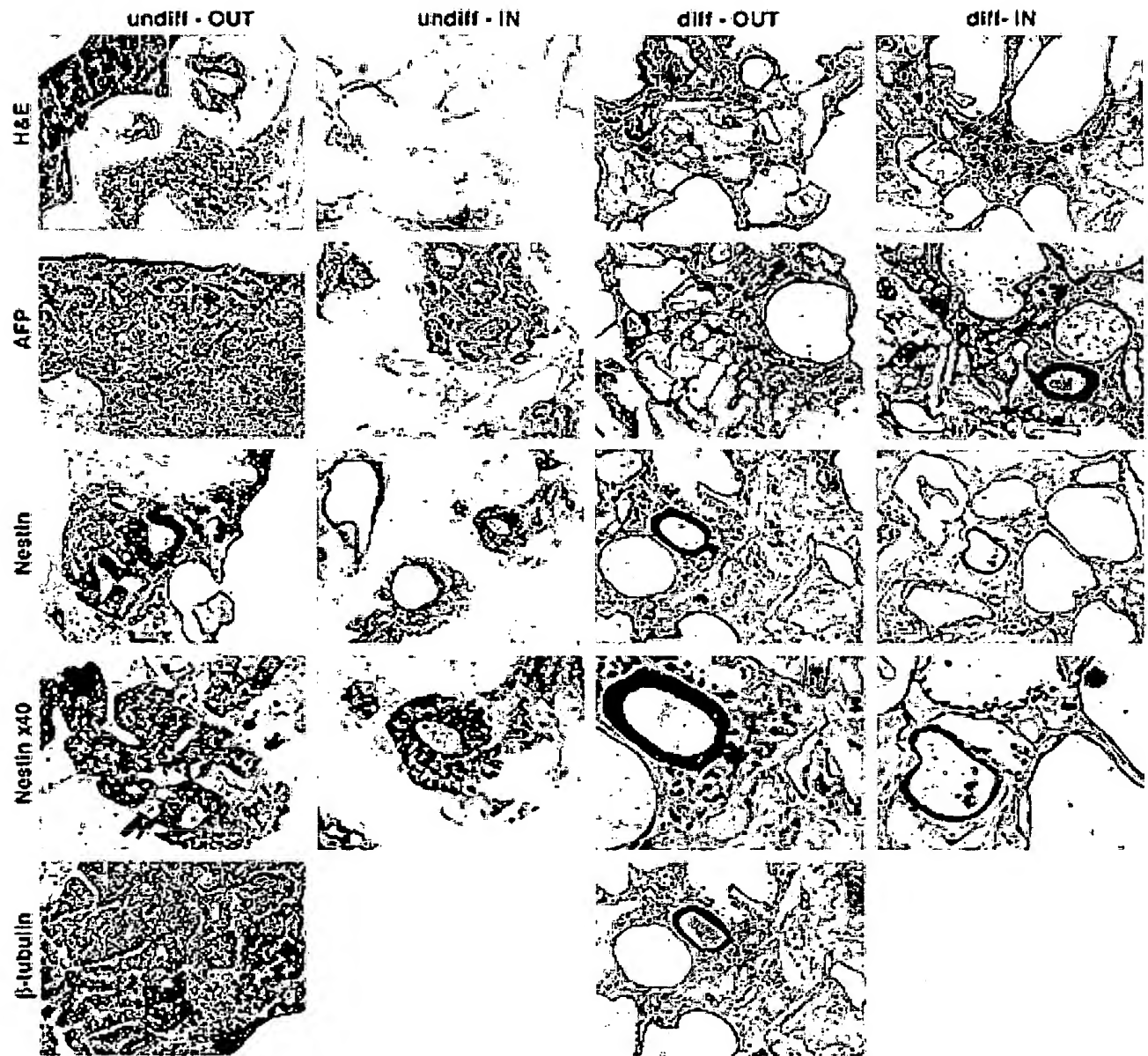


FIG. 6

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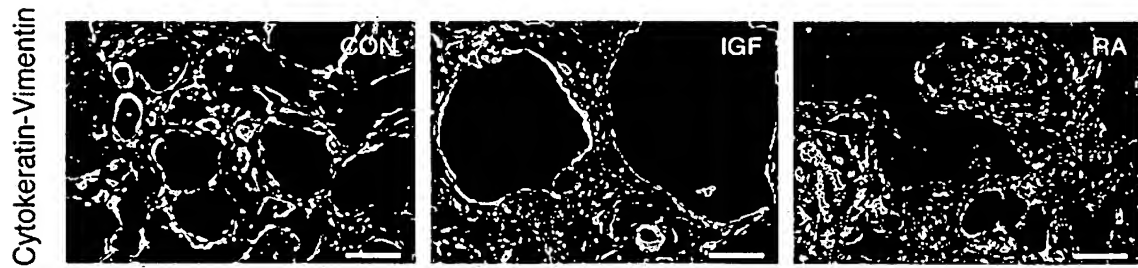


FIG. 7A



FIG. 7B

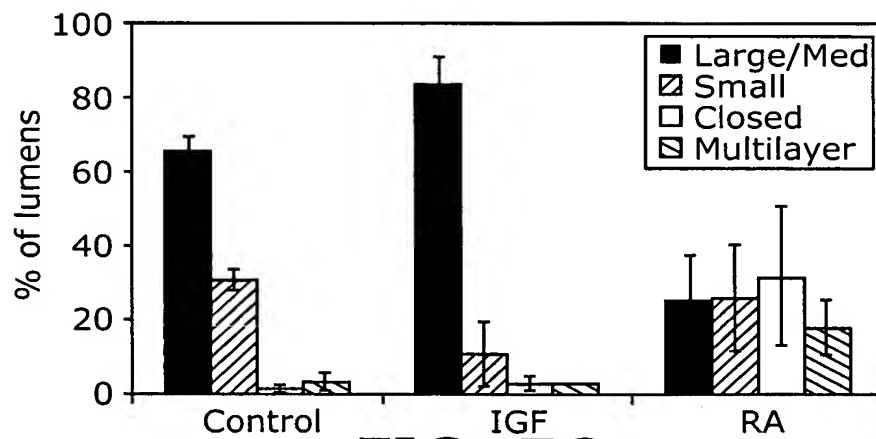


FIG. 7C

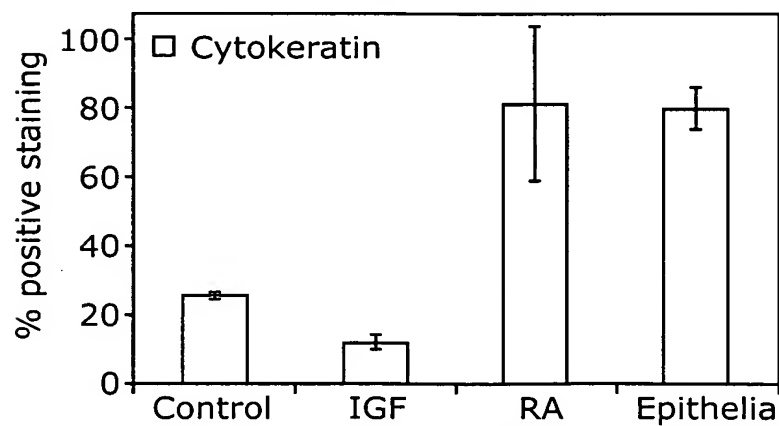


FIG. 7D

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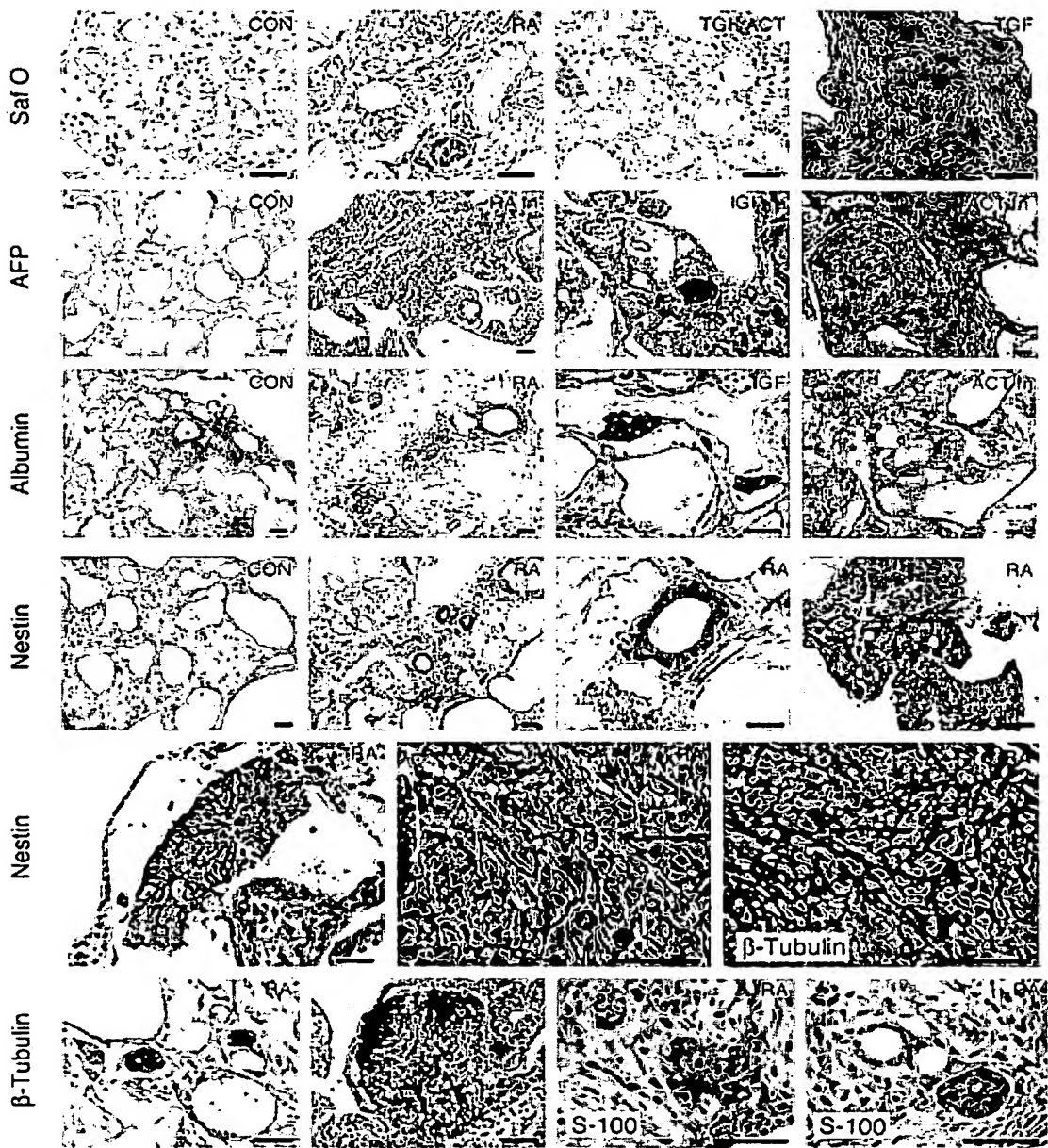


FIG. 8A

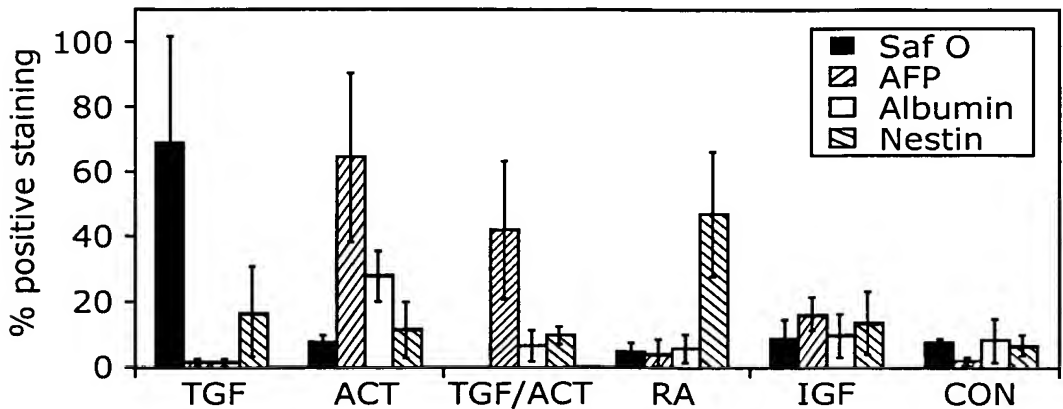


FIG. 8B

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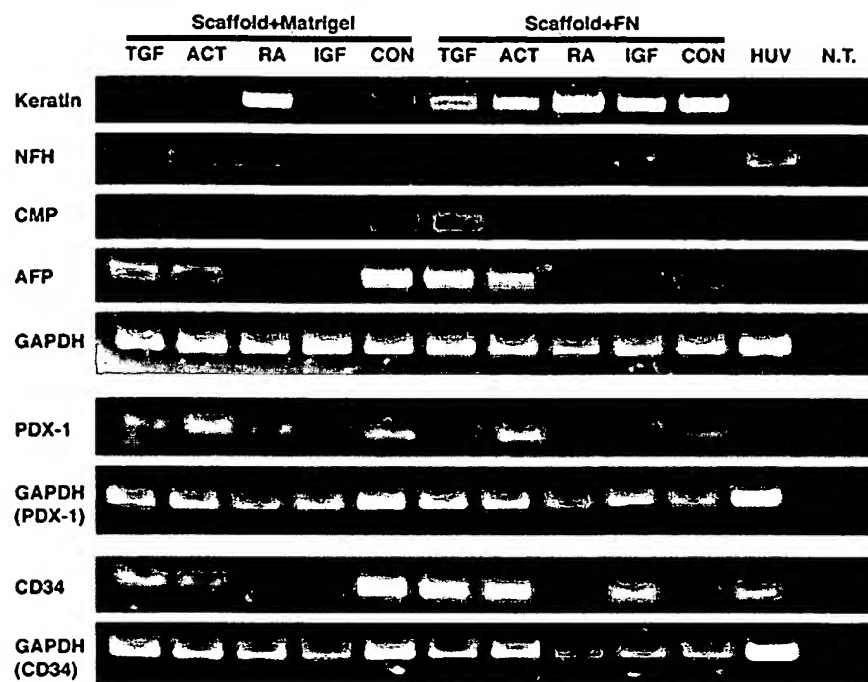


FIG. 9A

	TQF		ACT		RA		IGF		CON	
	M	F	M	F	M	F	M	F	M	F
Keratin	+	++	+	++	+++	++++	+	++	+	+++
NFH	++	+	++	+	++++	++	-	++	+	++
CMP	+++	++++	+	+	+	+	+	++	+++	++
AFP	++	+++	++	+++	+	-	+	-	+++	++
PDX-1	++	++	++++	++++	++	+	++	+	+++	++++
CD34	++	+++	++	+++			++	+++	+++	++

M = Matrigel

F = FN

FIG. 9B

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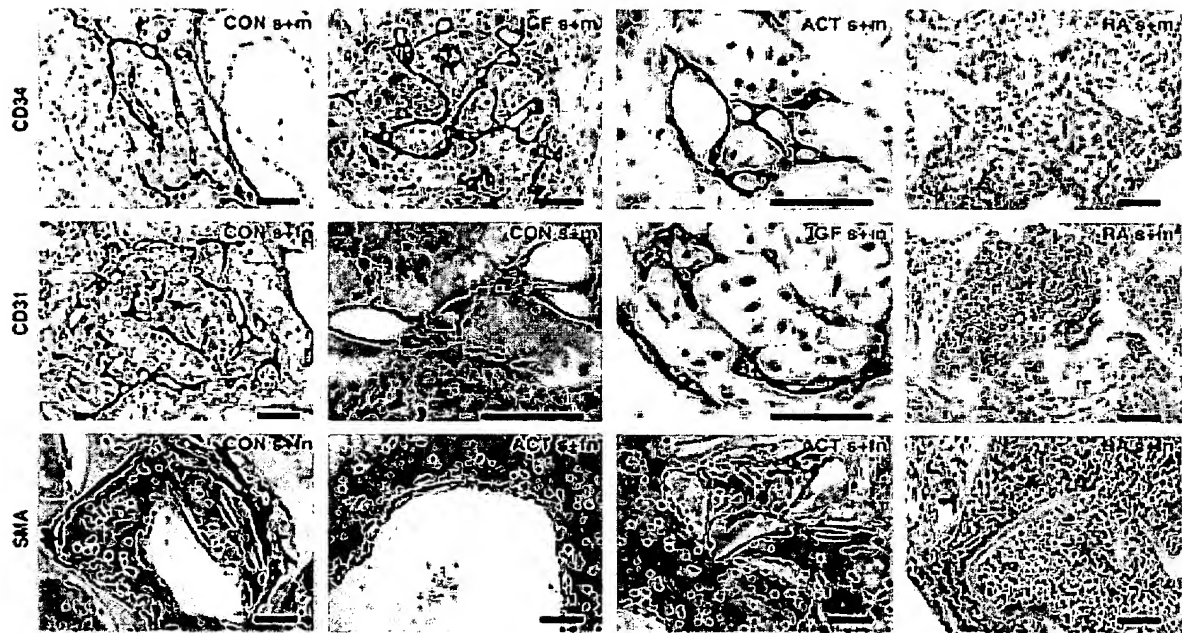


FIG. 10A

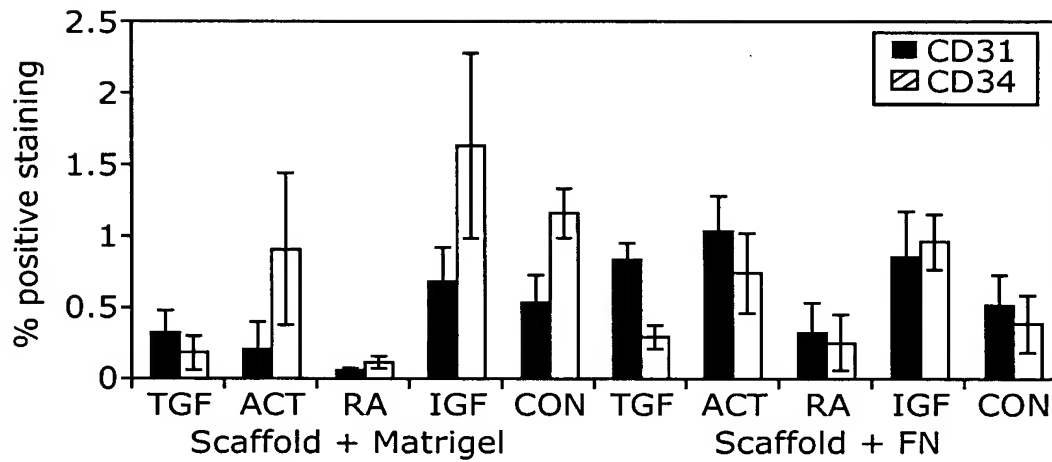


FIG. 10B



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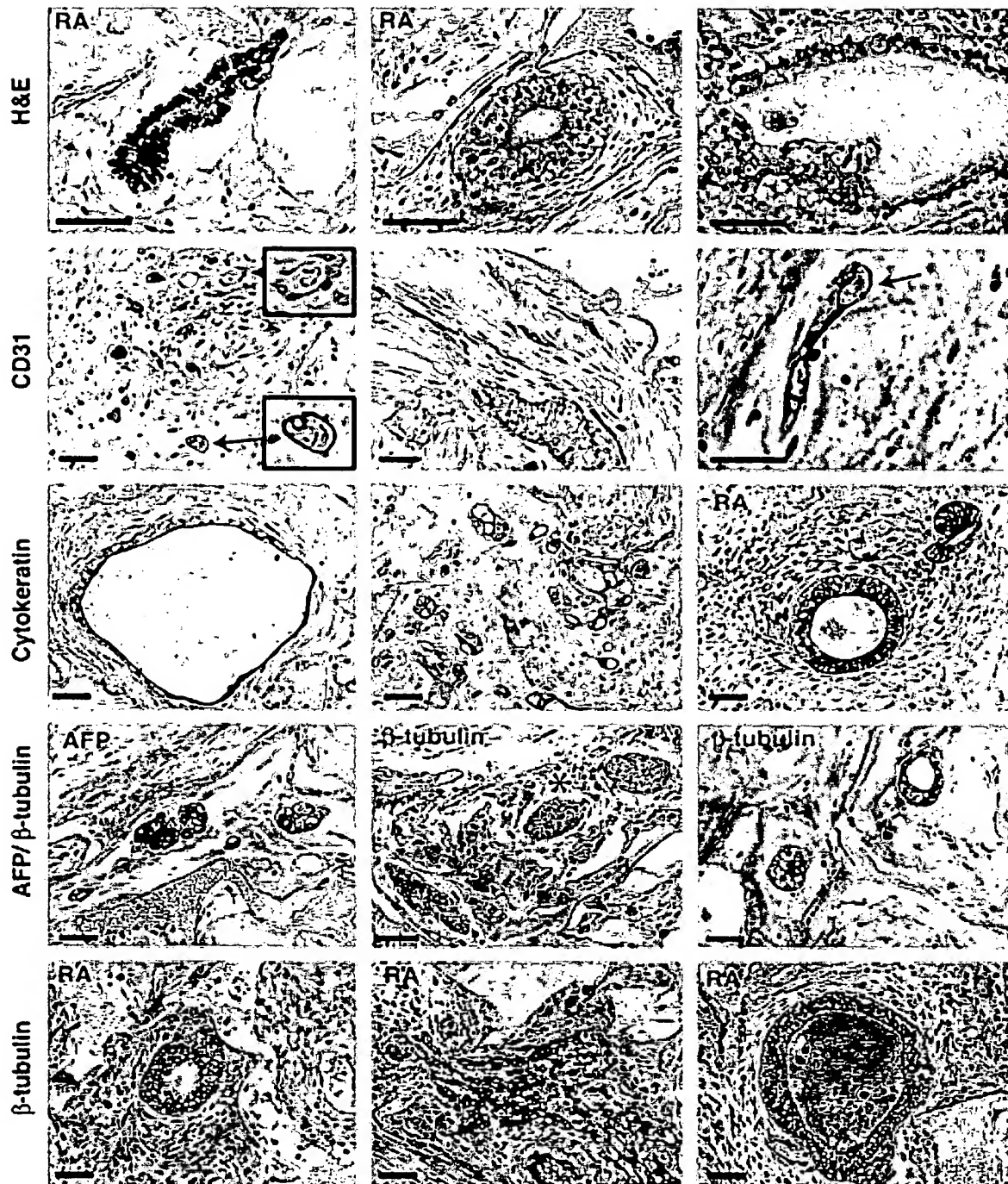


FIG. 11

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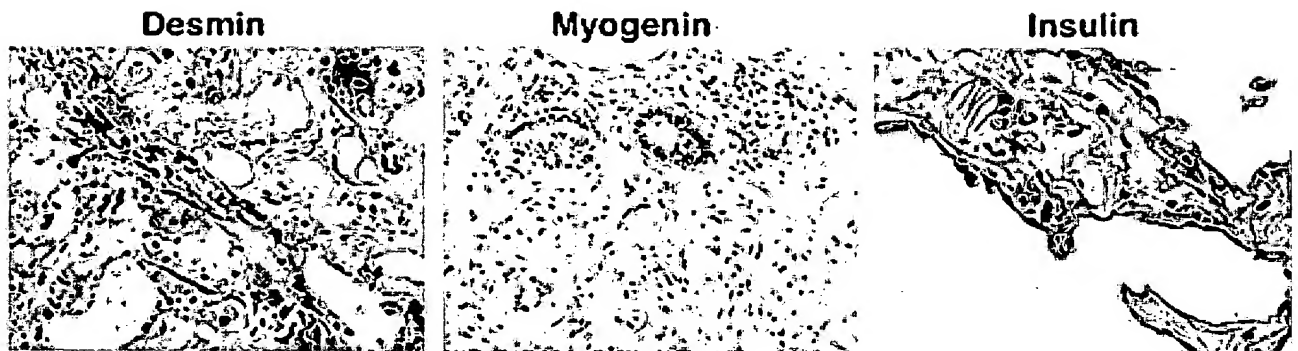


FIG. 12A

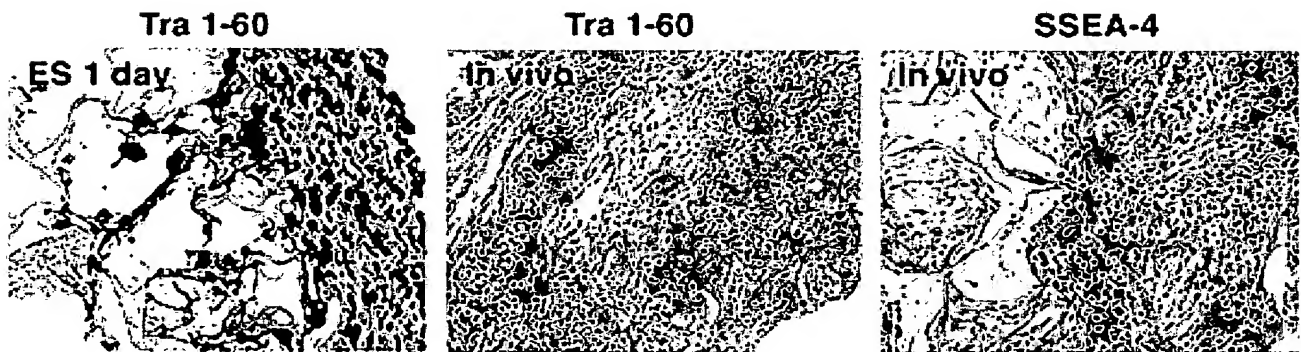


FIG. 12B



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